REMARKS

Claims 1-29, 31 and 35-38 are pending. This Amendment adds claim 38 and addresses each rejection raised by the Examiner. Favorable reconsideration is respectfully requested.

Claims 16, 17, 19 and 20 are indicated as being allowable "if rewritten to over come the rejection(s) under 35 U.S.C. § 112, second paragraph, set forth in this Office action..." As no § 112 rejections are offered in the Office Action, Applicant's undersigned representative contacted Examiner Lesperance by telephone. In a telephone conversation on January 12, 2004, Examiner Lesperance indicated that the reference to § 112 in the discussion of allowable subject matter can be ignored. Additionally, the Examiner said that it was a mistake if claims 21 and 31 depend from allowable claims (20 and 19 respectively), but were listed as rejected. Applicant thanks the Examiner for clarifying these points.

Applicant appreciates the indication that claims 16, 17, 19, 20, 21, and 31 would be allowed if rewritten in independent form, but respectfully submits that a broader scope of the invention is patentable in view of the art of record.

Claims 1-15, 18, 22-29, and 35-37 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S.P. 5,739,808 to Suga *et al.* ("Suga") in view of U.S.P. 5,872,554 to Chang *et al.* ("Chang").

In view of the extensive discussion already of record regarding Chang, for the purpose of brevity, a detailed analysis of Chang is omitted herein. However, if needed, Applicant asks that the Examiner refer back to the Amendment of June 27, 2003 for Applicant's analysis of Chang.

Suga discloses a method and apparatus for displaying an image on a display that has a higher resolution than the image. *See* Suga col. 2, lines 19-24. Each pixel of the image is displayed using NxM pixels of the display. *See, e.g.,* Suga col. 2, lines 25-32. The display is a two-state FLCD panel, requiring a binarization process to convert a multi-bit input image for 1-bit display. *See* Suga col. 1, line 43 to col. 2, line 4. In converting each pixel of the input image to MxN pixels for display, the apparatus of Suga uses a "multi-gradationing process" to increase the number of gradation. *See* col. 2, lines 45-53.

Suga is teaching a half-toning method, rendering variations of color of an original image by means of a plurality picture elements. The Examiner cites the discussion of Figures 9-12 at col. 5, lines 1-12 as disclosing a multi-value halftone process. *See also* claim 4 ("wherein the display device can perform a multi-level (equal to or greater than ternary) display for one pixel").

However, as disclosed at col. 5, lines 31-34, "[d]ata which was multi-value halftone processed by the above-mentioned halftone process unit 103 is converted into ON/OFF data of the binary display device, that is, converted into binary data of '1'or '2'." As demonstrated in Figs. 14A-14D of Suga, this multi-value halftone is displayed as a stable (*i.e.,* not modulated) binary output. *See* Suga col. 5, lines 31-64. In other words, a fixed binary image is displayed for the entirety of one frame of the original image.

Comparing Figs. 14A-14D of Suga to claim 1 of the present application, if Pixel x in Fig. 14A corresponds to one of the plurality of picture elements, then as shown in Fig. 14D, each pixel element is displayed by 1x2 subpixels. These 1x2 subpixels are a series of spatially adjacent cells, which Suga collectively refers to as a "pixel." For the purpose of argument, if the

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display were grayscale, each subpixel (*i.e.*, cell) would emit light in a same color. However, each cell still fails to express tone in three or more levels. Rather each cell is either on or off, as illustrated in Fig. 14D, for the entirety of the frame. It is the 1x2 subpixels (*i.e.*, cells) <u>together</u> which provide the ternary representation. Since the subpixels themselves do not individually express tones in three or more levels, the requirement of independent claims 1 and 13 that each cell expresses tones in three or more levels is not met. Nor is this requirement suggested.

Whereas Suga displays a fixed binary image for the entirety of one frame of the original image, Chang renders images using time-modulation, turning each pixel on-and-off multiple times in the period of one frame in order to simulate a level of grey. Specifically, each frame is rendered by a series of black-and-white pages. As Suga and Chang utilize completely different display methods, Applicant submits that there is no suggestion nor motivation to combine Suga and Chang. Nor is it clear that the "invention" of Suga could even be modified to utilize such time-modulation.

Additionally, the Examiner states in the Office Action that a difference value -28 (of Suga) corresponds to the average of the output luminance of all cells within each picture element (of the claimed invention). Applicant respectfully disagrees, since the output value is determined as three values 9, 128 and 255, in the case where the input data is value 100, the output value becomes 128 by <u>rounding</u> the numerical value in Suga.

Applicant adds new claim 38. No new matter is added. For the Examiner's convenience, exemplary support for claim 38 can be found on pages 34-35, pages 42-43, and in Fig. 5. Entry and consideration are requested.

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AMENDMENT UNDER 37 C.F.R. § 1.111
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In view of the above, reconsideration and allowance of this application are now believed

to be in order, and such actions are hereby solicited. If any points remain in issue which the

Examiner feels may be best resolved through a personal or telephone interview, the Examiner is

kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue

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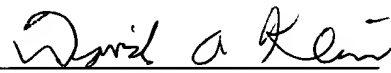
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